Acknowledgments

Most of this monograph was written during 2000–2002 while I was on assignment from JPL at GeoForschungsZentrum-Potsdam (GFZ), now a leading Earth science institution in Germany, and in the late 19 century a principal European center in the nascent field of mathematical geodesy. I wish to thank my colleagues at GFZ-Potsdam and DRL-Neustrelitz, Georg Beyerle, Jens Wickert, and Norbert Jakowski, for many stimulating discussions, and Professor Christoph Reigher, for creating an extraordinary scientific Atmosphäre at GFZ for visitors and staff alike. I also wish to thank the JPL senior management for granting me this "sabbatical." I especially wish to acknowledge support by the Solid Earth Program in NASA Code Y under Dr. John LaBrecque, who played a key programmatic role in the success of GPS applications in space. To Cami Melbourne, my friend and wife, I owe a great debt for her forbearance and technical support with the preparation of text and figures. Some of the work here sprang from concepts originating in the JPL groups involved in research and development of high-accuracy GPS receiver technology for flight applications, and in the radio occultation groups that use this technology. In this regard, particular thanks to George Hajj, Tom Meehan, Larry Romans, and Tom Yunck for many discussions over the years.

There is one person that I would like to especially acknowledge for the inspiration he has left me through his pioneering work in radio occultation. That is Gunnar Lindal, who retired from JPL nearly 15 years ago. Although I headed a relatively large organization within JPL for a long time, in which Gunnar worked, I never really worked with him; our few interactions were usually of a management or programmatic nature. However, eventually I

studied most of the papers that he wrote from the 1960s through the early 1990s. I regret not spending more time with him when I had the chance.

William G. Melbourne April 2004